

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.







# Forest Health Technology ENTERPRISE TEAM UPDATE

USDA FOREST SERVICE, STATE AND PRIVATE FORESTRY, FOREST HEALTH PROTECTION, FOREST HEALTH TECHNOLOGY ENTERPRISE TEAM

FALL 1999/  
WINTER 2000

## Pheromone Approved to Control Beetles

During the winter of 1996-97, snow, wind, and ice storms damaged trees throughout northern Idaho. Due to the extent of the damage, area forests are experiencing a serious outbreak of Douglas-fir bark beetles. Approximately 125,000 acres of forest on the Idaho Panhandle National Forests (IPNF)—in addition to adjacent state and private lands—are currently being affected by the beetles, and ground and aerial surveys from 1998 showed significant mortality in mature Douglas-fir stands.

K.E. Gibson-USDA Forest Service



Light-colored treetops indicate Douglas-fir beetle damage.

Severe beetle outbreaks can last several years; tend to kill older, larger trees, disrupt resource management plans, and create fuel loads that can increase the risk of stand-replacing fires. According to David Wright, IPNF Forest Supervisor, this is the most widespread beetle attack noted in northern Idaho since the 1950s, when some Douglas-fir stands lost up to 80 percent of their mature trees.

But help may be on the way for northern Idaho forests.

See **Pheromone**, page 4

### Inside . . .

Measuring Forest Damage with Airborne Video	2
FHP Field Staffs Discuss Forest Health Issues	3
New FHP Committee to Address Forest Health Information Needs	4
STDP "Successes" Brochure	5
New Publication Format-Input Requested	7
FHTET-FC is Making a Move	9
Events of Interest	Back page

## Photo Damage Assessment in Minnesota

Among the services FHTET provides to Forest Service staffs is a remote-sensing program to monitor forest health and capture forest damage. While much of the monitoring is performed on a regular schedule, unanticipated damage, whether from fire, insect outbreaks, or other factors, requires quick response. One of the remote-sensing tools available to clients is aerial photography, customized to the client's specific needs.

### Damage Assessment Needed

On July 4th, 1999, a severe storm blew across the northern border of Minnesota, causing extensive tree blowdown in the Superior National Forest, including portions of the Boundary Waters Canoe Area Wilderness (BWCAW), and on state Department of Natural Resources (DNR) lands. The USDA Forest Service and the Minnesota DNR, responsible for managing the areas,

See **Assessment**, page 6



# Measuring Forest Damage with Airborne Video

Following the 1997 Northeast winter ice storm, aerial survey maps were created to provide a detailed account of the damage extent. During subsequent observation, however, inaccuracies were discovered with the location of many of the delineated damage areas.

**Bill Frament** of the Northeastern Area contracted with **Bill Ciesla** of Forest Health Management International to devise a methodology to utilize airborne videography to measure forest damage. However, during the development of this course of action, the ice storm damage became less distinct, and so the initiation of this study was suspended.

Then, on July 4, 1999, a windstorm swept through the Superior National Forest and caused extensive tree blowdown damage in the Boundary Waters Canoe Area Wilderness. This event provided

the opportunity to continue the videography study.

## Project Description

**Bill Ciesla** contacted **Marc Roberts** of the Northeastern Area to help locate videography equipment and

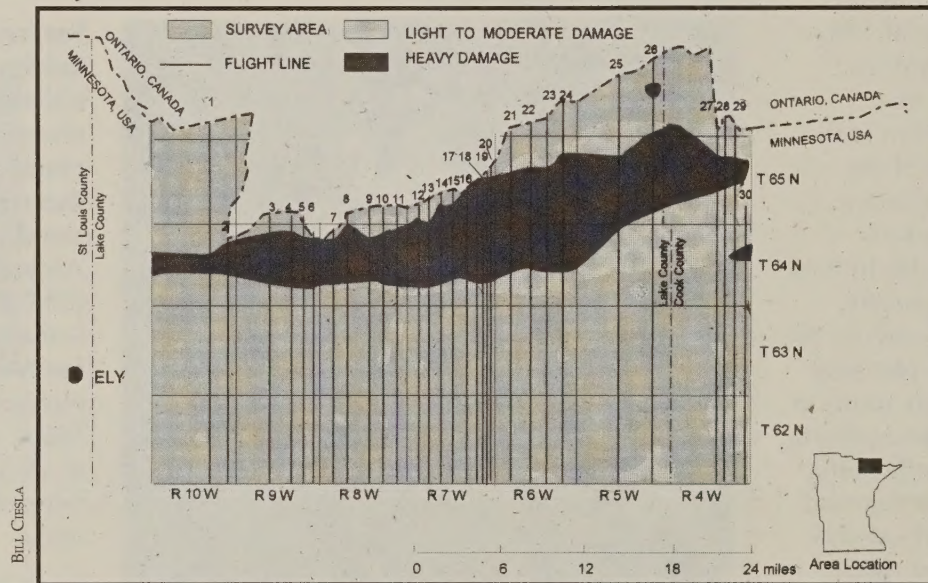
using FHTET's KingAir-100 aircraft. During the off days of Barry's photography mission, and using a Panasonic CLE 300 super-VHS video camera borrowed from Region 8, pilot **Bill Snyder** from Region 2 flew the airborne

videography mission.

The method of investigation used was based upon the principle of strip sampling. Sample strips were randomly placed in a north-south orientation over the project area, and video imagery

was acquired. The time over each specified stratum was recorded with a stopwatch. Knowing the speed of the aircraft, the distance traveled was calculated based upon the time recorded. Using the

See **Airborne Video**, page 8



Graph of blowdown damage generated with airborne videography tools.

an aircraft to conduct the assessment study. **Barry Russell**, remote sensing specialist with Integrated Technical Engineering and Computer Services International (INTECS), was concurrently conducting an aerial photography mission in the same general area



# FHP Field Staffs Discuss Forest Health Issues

## Region 10 Features Geospatial Data, Forest Health Issues

**Jerry Boughton**, Forest Health Program Leader for the USDA Forest Service's Alaska Region (Region 10), provided the Forest Health Technology Enterprise Team with an opportunity to meet with his staff and some of his key collaborators in September. **Ross Pywell**, **Eric Smith**, and **Loren Iverson** from the Fort Collins FHTET office spent three days in Anchorage meeting with Jerry, **Beth Schulz** (FHP Ecologist), **Roger Burnside** (State Entomologist, Alaska Division of Forestry), and **Jerry Flemming** (Consultant, USGS, Earth Resource Observation Systems Alaska) to discuss significant forest health issues in Alaska and the importance of collaborative action and technology applications to deal with the extensive and remote Alaskan landscapes.

The Enterprise Team was given an excellent description of Alaska forest types, land ownership patterns, and forest health issues. The primary forest health issue is the spruce beetle epidemic centered in south-central Alaska, which has impacted 3 million acres in the last 15 years. This epidemic reached unprecedented levels in the 1990s, possibly due in part to milder winters, which allowed the beetles to go into a one-year life cycle instead of the normal two-year cycle; as a result, entire drainages suffered nearly 100 percent spruce mortality.

The yellow-cedar decline in southwest Alaska is another major forest

health issue. While the total impacted area, estimated at 595,000 acres, isn't as large as the spruce beetle impact area, the economic effects may be greater. Yellow-cedar is an extremely valuable commercial tree, in addition to its importance in the ecology of the area. The wood and bark of the yellow-cedar is also important to the native people. The cause of the decline is not understood, but appears to be naturally occurring from some environmental stress. The poor regeneration potential of yellow-cedar make their decline particularly significant.

Ownership of Alaska lands is roughly 60 percent Federal, 15 percent State, and 25 percent private (primarily native ownership). Federal ownership is divided among the National Park Service, Bureau of Land Management, National Forest Services, and Fish and Wildlife Service. Because of the mix of ownership and the lack of resources by any single ownership entity, the Region 10 FHP Office was an early proponent of the standardization of Alaska geospatial data and the sharing of this data through web technologies.

The Enterprise Team was given a demonstration of the Alaska Geospatial Data Clearinghouse web site, which is a joint project of the above groups to share their data, with the USGS in Alaska providing the technical lead. (You can visit this site at <http://agdc.usgs.gov/>.) The Enterprise Team is looking at this web site as a model to develop a similar clearinghouse for forest health-related geospatial data in the "lower 48."

On the last day of their visit, **Beth Schulz** took the Enterprise Team on a tour through the Kenai Peninsula. She provided an extremely interesting and thorough tour and explanation of the Kenai ecology, where participants observed a portion of the vast area of trees killed by spruce beetles. Beth also described some of the problems Region 10 faces in trying to manage insect and disease problems and other factors affecting spruce regeneration.

This visit did identify areas where the Enterprise Team could support Region 10 efforts, such as implementing the Airborne Video Toolkit, insect and disease modeling, and vegetation mapping assistance. Enterprise Team members left Alaska looking forward to continuing work with the Region 10 FHP staff. For more information on Forest Health Protection in Alaska, visit their web site at [www.fs.fed.us/r10/spf/fhpr10.htm](http://www.fs.fed.us/r10/spf/fhpr10.htm).

## Southern Region Hosts Forest Health Tour for FHTET and WO FHP

**Bob Anderson**, the Southern Region Unit Leader, invited FHTET and Washington Office FHP to tour his Region in September. **Bill Carothers** (Asheville Field Office Representative), **Wes Nettleton** (Southern Region Entomology Program Manager), **Richard Spriggs** (Asheville Field Office, Biological Technician), and **Rusty Rhea** (Asheville Field Office, Entomologist) provided the Enter-

See Tour, page 8



## Pheromone, from page 1

This past June, after more than twenty years of research, testing and development, **John Stein** (Non-Target Impacts and Management of Pesticides, FHTET-Morgantown) announced the EPA's approval of the registration of the Douglas-fir bark beetle pheromone, MCH (3-methyl-2-cyclohexen-1-one). **Dr. Janet Andersen**, Director of EPA's Biopesticides and Pollution Control Division, signed the unconditional registration of the MCH Bubble Cap on June 25, 1999. MCH is the first pheromone to be registered by the EPA for use against bark beetles.

## What is MCH?

Pheromones are chemicals released naturally by insects to communicate with one another to attract mates or other feeding insects, or to repel potential competitors. The synthetic pheromone MCH replicates an anti-aggregation pheromone, that beetles use to send a "no vacancy" signal out to other individuals indicating that a host tree is already occupied. This type of communication pheromone is used by the beetles to regulate their densities and to minimize competition between individuals.

## How will MCH be used?

MCH will be used by forest managers specifically to modify the behavior of the Douglas-fir beetle (*Dendroctonus pseudotsugae*). MCH has consistently been highly successful in preventing Douglas-fir bark beetle infestation of individual live trees during field studies; the current outbreak in Idaho has provided forest managers with the opportunity to use MCH on a scale larger than has been possible in the past.

## History of MCH

Prior to the full registration of MCH, two Forest Service research stations (the Intermountain Station in Moscow, Idaho, and the Pacific Northwest Station in Corvallis, Oregon) worked with Oregon State University, the State of Idaho, and the State of Oregon on this large-scale MCH research project.



SANDRA KEGLEY, USDA FOREST SERVICE

*Sandra Kegley prepares to attach an MCH bubble cap.*

One of the bark beetle treatments developed involves hanging MCH filled "bubble caps" in live trees throughout the beetle-infested area. The pheromone is released through the capsule wall of the bubble caps and dispersed aerially throughout the forest, giving beetles the message that the trees in the area are already occupied.

However, to be most effective, MCH must be applied by late April, before bark beetle flight. As MCH was not yet registered as of the spring of 1999, **John Stein**, working with the State of Idaho and Region 1,

See **Pheromone**,  
page 5

# New FHP Committee to Address Forest Health Information Needs

A new Forest Health Protection (FHP) committee was established by the FHP Directors at their August, 1999, meeting in Post Falls, Idaho. The new committee was formed because of the concern that many important FHP data sets are not "warehoused" in corporate databases, and may be lost or inaccessible to future users. The new FHP-Natural Resources Information System (NRIS) committee is charged with: developing a list of all FHP databases; determining which databases should be migrated to NRIS and the cost to accomplish this task; determining

needs for future data collection; and determining changes needed to the new National Common Stand Exam, NRIS standard reports, and NRIS analysis tools. **Judy Adams**, FHTET Program Manager for Modeling, will lead a committee that will ensure that current and future forest health information needs of FHP staff are being designed into the NRIS, and will also help implement NRIS standards in all FHP offices. The committee will submit a report with recommendations to the FHP Directors at their Fall 2000 meeting.





## Pheromone, from page 4

obtained an Experimental Use Permit from the EPA to allow the application of MCH this year.

Test sites, including both large stands (150-250 acres) and individual trees were selected for treatment on the Idaho Panhandle National Forests and on private lands, covering approximately 2,000 acres in northern Idaho. Indications so far are that these most recent applications were successful in protecting live trees.

## Future Use

Pheromone treatments for the bark beetles are environmentally sensitive, and research has shown no harmful effects on natural enemies of bark beetles. This new technology is an example of the Forest Service policy to employ alternative non-toxic methods of pest management, and is especially important as conventional pesticide use continues to decline.

Now that MCH has been registered, its use will provide resource managers with a tool to proactively manage Douglas-fir bark beetle outbreaks, potentially reducing the severity of beetle infestations in the future.

For more information, contact **John Stein**, USDA Forest Service, 180 Canfield Street, Morgantown, WV 26505; phone: 304/285-1584; e-mail: [jstein/na\\_mo@fs.fed.us](mailto:jstein/na_mo@fs.fed.us).

Information for this article was provided by: **Carol Bell-Randall**, Forest Health Protection-IPNF, Coeur d'Alene, Idaho, and **John Stein**, Program Manager FHTET-Morgantown, West Virginia.

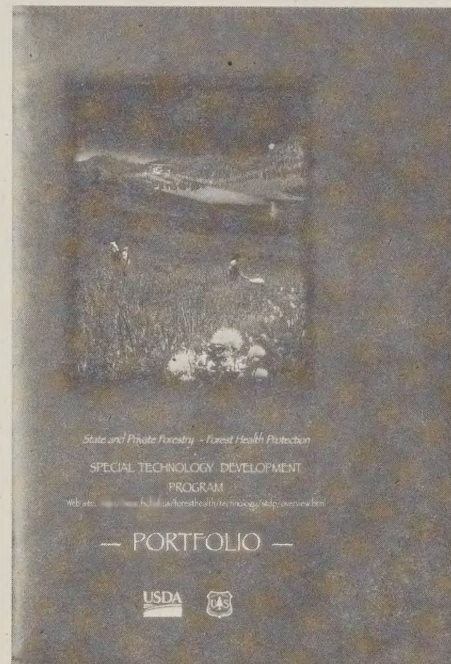
# STDP "Successes" Brochure

In any science-based discipline, theory and research are building blocks for progress and growth. But without real-world application, the benefits of technology research are not realized. With this in mind, the Special Technology Development Program (STDP) was established in 1989, specifically to accelerate the transfer of research findings into practical uses that contribute to fulfilling Forest Health Protection (FHP) goals.

Since 1990, over 150 projects have been funded. Many of the STDP projects bridge the gap between theory and practice while others are applications of previous research. The entire inventory of STDP projects represents a spectrum of forest health issues including prevention or prediction of future conditions as well as resolving urgent insect and disease concerns.

As requested by the STDP Steering Committee, FHTET is producing a "Successes" brochure that highlights ten years of STDP accomplishments. The goal of the brochure is to increase awareness of the important role that STDP plays in protecting and restoring forest health, and the primary audience of the brochure consists of potential supporters and partners external to Forest Health Protection. Partnerships have always been the mainstay of the program, ensuring that technological products have the capacity to be widely applied.

Numerous people have contributed to the production of the brochure. **Helen Maffei** (Pacific Northwest Region) is the Project Coordinator and **Traci Mc. Merritt** (PNW Region) has taken the lead in



design. The steering committee includes **John Taylor** and **Dave Drummond** from the Southern Region, and **Jerry Boughten** from the Alaska Region.

Project information and quotations have been provided by **Ed Holsten** (Alaska Region); **Dan Twardus** and **Brad Onken** (Northeastern Area); **Carol Randall**, **Susan Hagle** and **Jim Byler** (Northern Region); **Susan Frankel** (Pacific Southwest Region); **Sheila Andrus** (Research and Development); and **Jeri Lynn Harris** (Rocky Mountain Region). Photographs were provided by: **John Hutmacher** and **Tom Iraci** (PNW Region), **Brad Onken**, and **Carol Randall**. **Mark Riffe** (INTECS International) is the editor.

Distribution of the brochure is anticipated in early 2000. Please check our website for more information at <http://fsweb.ftcol.wo.fs.fed.us/wo-fc/fhtet/stdp>.





## Assessment, from page 1

were immediately concerned with determining the extent of the damage and assessing the management responses needed. Major concerns were that, left undressed, some portion of the blowdown area might be subject to subsequent insect outbreak and prone to wildfire, threatening standing, healthy trees and a valued recreational resource.

## Ecological Concern

Of particular concern is that insects, particularly *Ips pini* (pine engraver beetle) and *Dendroctonus rufipennis* (spruce beetle), will use the blowdown to breed and build large populations, putting healthy jack pines and white spruce, respectively, at risk in the years to come. Also, any standing but weakened birch trees will probably die in the next two to five years from attacks by *Agilus anxius* (bronze birch borer). In addition, there is the potential for fire in the years to come due to the increase in fuels.

## Dead Wood is Still Useful

Salvage logging is one possible response to the sudden increase in downed trees outside the wilderness area, which would reduce the amount of material available to fuel a fire. If started, fire could sweep into the BWCAW and become extremely dangerous to wilderness users. Salvage efforts would have to take place soon, however, as longhorn wood borers could bore holes in downed trees, destroying the value of the logs.

## Aerial Photography Collected

The first step in addressing these issues was to collect data on the

extent and severity of the damage. At the request of the Superior National Forest, FHTET made its remote-sensing capabilities available for data collection. These services included aerial photography, utilizing FHTET's designated remote-sensing aircraft (a KingAir-100), a Panasonic CLE 300 super-VHS video camera, and crew, including **Barry Russell** (Remote Sensing Specialist, INTECS International), **Bill Snyder** (Pilot, Region 2), and **Donnell Harris** (FHTET-FC)

The advantage of aerial photography is in image resolution and versatility in applying office and field data collection. By viewing aerial photographs, resource managers can determine the type of



The FHTET King Air-100 used for aerial photography missions

to September 1. Photographs were taken at 1:24,000 over the Boundary Waters Canoe Area Wilderness, 1:16,000 over the forested area in general, and at 1:8,000 over the most heavily storm-damaged area. While color-infrared film is generally used for forest health monitoring, true-color film was used in this instance, as it offers better contrast

in interpreting shaded areas created by the blowdown.

The mission took 37 days to complete, and covered 75 percent of the affected area (the shortfall was due to the high frequency of cloudy days over the affected area when photographs could not be taken).

Once the film is

developed and inspected, images taken over State lands will be delivered to the Minnesota DNR, where they will be scanned into digital format and loaded on compact disks for distribution to the appropriate District offices,

See **Assessment**, page 7



Aerial photo of blowdown damage. Light areas show downed trees.

trees most affected, the extent and boundaries of the damage, and the severity of the blowdown at a small scale.

To assess the extent of the damage, FHTET flew three million acres of forest and took 3,000 photographs at three different scales from July 26





# New Publication Format - Input Requested

FHTET has recently published *Biology and Biological Control Agents of Yellow Starthistle* (FHTET Report 98-17), written by **Cynthia Jette**, **John Connett**, and **Joseph P. McCaffrey** of the Department of Plant, Soil, and Entomological Services at the University of Idaho.

This report is intended as a hands-on, how-to reference guide for establishing biological control agents in concentrations of yellow starthistle. The publication format is unique in that it combines the biology and the biological control information in one concise publication. It is arranged in well-defined sections, supplying valuable information to land managers and field workers.

The first section of the manual presents general characteristics of the yellow starthistle and the benefits and limitations of using biological control agents. The report then describes specific starthistle biology, with photographs and timetables of the plant's growth stages.

The next section discusses the five yellow starthistle biological control agents: three weevil and two fly species. Here, one will find: general weevil and fly biology; specific biology and distinguishing characteristics of each agent including photographs; tables comparing the agents' life cycle in relation to growth stages of the starthistle; and the destruction potential, benefits, and limitations of each agent.

The longest and final section of the manual is an extremely useful "how-to" section. Topics include:

how to establish a biological control program, how to care for and release agents, and how to establish photograph points for monitoring.

The manual concludes with a seven-page bibliography, a troubleshooting guide, a checklist form, and monitoring report forms. The

Montana, at 406/758-5200, e-mail: tbarboul/r1\_kalispell@fs.fed.us; or **Richard Reardon** in Morgantown, West Virginia, at 304/285-1566, e-mail: rreardon/na\_mo@fs.fed.us.



## Assessment, from page 6

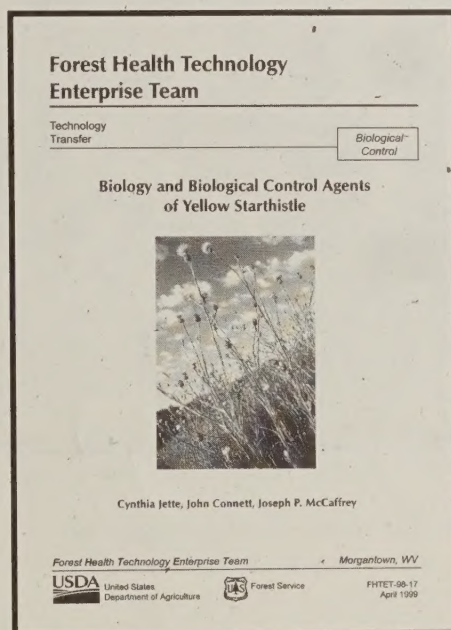
along with the original color photographs, for damage assessment.

## Uses of Aerial Photography

Aerial photography has become a common tool in assessing forest health. FHTET has flown remote sensing photography missions for numerous National Forests and other resource agencies since 1988 in support of forest health monitoring, damage assessment, and resource identification. Its use in assessing damage for management decision-making reflects the flexibility of this tool, while FHTET's quick response in this case enabled resource managers in northern Minnesota to make timely assessments and begin restoration planning.

• • •

This article was prepared with information supplied by **Jim Ellenwood**, Remote Sensing Program Manager, FHTET-Fort Collins; **Steve Katovich**, Entomologist, Northeastern Area staff; and the Superior National Forest and Boundary Waters Canoe Area Wilderness websites. For further information, contact **Mike Connor**, Entomologist, Northeastern Area, at 651/649-5180.



authors chose this format in order to increase the utility of biological control publications. One publication provides land managers and field workers with all the information they need to apply biological control agents to yellow starthistle fields.

The authors would like to create a network for input on the new format via email. The primary contact for input will be **Dr. Linda Wilson**, e-mail: lwilson@uidaho.edu or **Carol Bell-Randall**, e-mail: crandall/r1\_ipnf@fs.fed.us. Copies of the publication can be ordered from: **Carol Bell-Randall** in Coeur d'Alene, Idaho, at 208/765-7343; **Tom Barbouletos** in Kalispell,



**Airborne Video**, from page 2 distance traveled and the swath width of the video, damaged land area was computed. The area was delineated into three categories of damage: light, moderate, and heavy.

## Assessment Results

The results of the airborne videography damage assessment project were quite comparable to aerial sketchmapping survey results that were flown about the same time, and offer a new tool for making accurate damage assessments. The results of this study are available in a published form.

Contact: **Bill Frament** at USDA-FS, Louis Wyman Building, Forestry Sciences Lab, 271 Mast Road, Durham, NH 03824; phone: 603/868-7707, e-mail: bframent/na\_du@fs.fed.us, or **Jim Ellenwood** at USDA-FS, 3825 East Mulberry Street, Fort Collins, CO 80524; phone: 970/498-1778, e-mail: jellenwood/wo\_ftcol@fs.fed.us.

## Publications Available On-line

The **FHM Aerial Survey Standards** and the **Aerial Survey GIS Handbook** are now on-line at the following address: [www.fs.fed.us/foresthealth/id/id.html](http://www.fs.fed.us/foresthealth/id/id.html). For more information, please contact Ross Pywell (USDA FS, FHTET-FC) at (970) 498-1705 or [rpywell/wo\\_ftcol@fs.fed.us](mailto:rpywell/wo_ftcol@fs.fed.us)

## Tour, from page 3

prise Team and the WO staff with an outstanding overview of the priority issues affecting the health of the southeastern forests.

Primary concerns discussed were: fast-moving infestations of the southern pine beetle; Gypsy moths

(Asheville Field Office, Biological Technician) on fusiform rust; **Steve Oak** (Asheville Field Office, Plant Pathologist) on oak decline; **Rusty Rhea** on hemlock woolly adelgid; **Andy Roberts** (Department of Entomology, Virginia Tech) on Slow the Spread; **Scott Salom** (Depart-



*Southern Region staff hosts FHTET and WO visitors.*

and hemlock woolly adelgid; as well as fungi that cause fusiform rust, dogwood anthracnose and oak wilt. Other issues discussed included: oak decline, exotic weeds, acid deposition, and air quality/visibility.

Many presentations were provided to the Team and the WO throughout the tour, including: **Rusty Rhea** and **Andy Boone** (Forest Health Specialist, South Carolina Forestry Commission) on the southern pine beetle; **Pete Roussopoulos** (Station Director, Southern Research Station) and **Bill Carothers**, on priority issues affecting the Southern Region; **Ed Yockey** (FHP Analytical Biologist) on the Southern Atlas; **John Ghent** (Asheville Field Office, Entomologist) on Gypsy moths; **Donna Leonard** (Asheville Field Office, Entomologist) on the Slow the Spread database; **Carol Young**

(Department of Entomology, Virginia Tech) on the Southern Pine Beetle Internet Control Center; **Dee Dee Sellers** (Asheville Field Office, Entomologist) on Gypsy moths in Shenandoah National Park; **James Aokerson** (National Park Service, Shenandoah National Park) a Shenandoah National Park overview; **Tom Blount** (National Park Service, Shenandoah National Park) on Shenandoah ecology and air quality.

FHTET visits to Forest Health Protection field offices are an emphasis item in 1999-2000, consistent with the recommendations in the June, 1999, FHTET Review Team Report, recently accepted by Acting FHP Director **Mel Weiss**.



## FHTET- FC Is Making a Move

Effective January 3, 2000, FHTET-Fort Collins will be located in Building A of the new Natural Resources Research Center (NRRC) which is located about one-half mile south of the existing Rocky Mountain Research Station office in Fort Collins, Colorado.

NRRC will also be the new home of other Fort Collins-based Washington Office Detached Units, including: the Inventory and Monitoring Institute, Acquisition Management, Resource Financial Operations, Forest Management Service Center, and Range Management. Staff from the USFS Rocky Mountain Research Station (RMRS) and USDA offices, such as: Animal and Plant Inspection Services (APHIS), Natural Resources Conservation Service (NRCS), Office of the Chief Information Officer (OCIO), and the Office of the Inspector General (OIG), will be moving into the new building as well.

Planning for the NRRC began over ten years ago, and it became one of the Government's largest reinven-

tion projects. The intent of the Center is to provide a work setting for federal agencies to partner in protecting our nation's agricultural and natural resources. This collocation of agencies and Forest Service units will provide improved customer service by allowing "one-stop-shopping" and increased opportunities for collaboration among all the partnering agencies, as well as with Colorado State University faculty and students.

Please use our new address beginning January 1, 2000.

Address format for FHTET personnel:

**Name and/or Title**  
**USDA, Forest Service, FHTET**  
**Suite 331**  
**2150 Centre Avenue, Bldg. A**  
**Fort Collins, CO 80526-1891**

FHTET-Fort Collins staff will be notifying contacts with updated individual phone numbers during the next few weeks. E-mail addresses will remain the same.

Forest Service staff phone numbers will be: **Andy Mason** 970/295-5840, **Judy Adams** 970/295-5846, **Marla Downing**, 970/295-5843, **Jim Ellenwood** 970/295-5842, **Georgia Haynes** 970/295-5839, **Eunice Hopman** 970/295-5838, **Loren Iverson** 970/295-5844, **Ross Pywell** 970/295-5848, **Nick Reyna** 970/295-5845, **Sally Scrivner** 970/295-5847, and **Eric Smith** 970/295-5841.

FHTET contractors can be contacted through the appropriate program manager.

### Notice

Due to the Fort Collins-FHTET office move, this issue of the FHTET Update is a combined Fall/Winter issue. Look for the Spring 2000 issue next!

## FHTET Update Available in Electronic Format

In an effort to make more efficient use of the media available to the Enterprise Team, we would like to gauge your interest in receiving the FHTET Update in electronic format. If you would be interested in receiving a .pdf version of the newsletter via e-mail rather than the paper version through the regular mail, please let us know at [fhtetmail/wo\\_ftcol@fs.fed.us](mailto:fhtetmail/wo_ftcol@fs.fed.us) (Forest Service system: fhtetmail/wo\_ftcol). We would enclose a reader program so that you could access this version of the newsletter regardless of your operating system and existing applications. An advantage: you would receive the FHTET Update in **COLOR**! If there is sufficient interest, we would like to make this newsletter available in either medium, thereby lessening the impact on our natural resources.





USDA Forest Service



Forest Health Technology Enterprise Team

Suite 331

2150 Centre Avenue, Building A

Fort Collins, CO 80526-1891

<http://www.fs.fed.us/foresthealth/technology>

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE, \$300

BULK RATE

US POSTAGE

PAID

USDA FOREST SERVICE

PERMIT NO G-40

\*\*\*\*\*  
\*\*\*\*\*AUTO\*\*MIXED AADC 800  
USDA, ARS, NAT'L AGR LIBRARY 3  
CURRENT SERIAL RECORDS, RM 002  
10301 BALTIMORE AVE  
BELTSVILLE MD 20705-2326

1440

## Events of Interest

**January 18-21, 2000, Annapolis, Maryland**

11th USDA Interagency Research Forum on Gypsy Moth and Other Invasive Species.

**Contact:** Katherine McManus, USDA Forest Service, Northeastern Research Station, 51 Mill Pond Road, Hamden, CT, 06514. Phone: 203/230-4330. E-mail: [kmcmanus/ne@fs.fed.us](mailto:kmcmanus/ne@fs.fed.us).

**April 10-14, 2000, Albuquerque, New Mexico**

USDA Forest Service Eighth Biennial Remote Sensing Applications Conference: *Remote Sensing and Geospatial Technologies for the New Millennium*

**Contact:** Ms. Gail Shaw, RS 2000 Attendance Chairperson, USDA Forest Service-RSAC, 2222 West 2300 South, Salt Lake City, UT, 84119-2020. Phone: 801/975-3750. Fax: 801/975-3478. E-mail: [gshaw/wo\\_rsac@fs.fed.us](mailto:gshaw/wo_rsac@fs.fed.us)

